Claims:

1.   A method of presenting data from at least one data source, said method comprising the steps of:

5   (i)   holding a representation of said least one data source and at least one previous view of said least one data source;

(ii)   identifying at least one compulsory entity in said representation; and

(iii)   presenting data structure said least one compulsory entity and one or more context entities, where said context entities are obtained from said representation and

10   context data obtained from said least one previous view.

2.   A method according to claim 1 wherein said one data source is hierarchical.

3.   A method according to claim 1 wherein said representation comprises a graphical

15   representation.

4.   A method according to claim 3 wherein said graphical representation comprises a schema representation of said least one data source and said least one previous view.

20 5. A method according to claim 1 wherein said context data comprises data evaluated to represent a measure of relevance of said context entities to said compulsory entity.

6.   A method according to claim 5 wherein said context data comprises at least one numerical data.

7.   A method according to claim 6 wherein said least one associated numerical data comprises occurrence and joint-occurrence frequencies of entities in said representation observed in said least one previous view.

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8.   A method according to claim 2 wherein a root node of said least one hierarchical data structure is an ancestor node of said least one compulsory entity in said representation.

10   9.   A method according to claim 2 wherein said least one hierarchical data structure is assigned a score equal to the occurrence probability of a root node given the occurrence of each of said least one compulsory entity.

10.   A method according to claim 8 wherein said one or more context entities is
15   selected from the group consisting of:

        (a)   said root node;

        (b)   a first set of nodes along at least one directed path in said representation from said root node to said least one compulsory entity;

        (c)   a second set of nodes selected from descendant nodes of said root node in
20   said representation, each said node in said second set being selected based upon a corresponding occurrence probability, each said occurrence probability being derived from the occurrence of ancestors of said node up to and including said root node and said least one compulsory entity;

        (d)   a third set of nodes selected from descendant nodes of said root node in

said representation based on a corresponding distance of said third set node from said root node in said representation; and

(e)   a fourth set of nodes selected from descendant nodes of said root node in said representation based on a corresponding distance of said fourth set node from said

5   least one compulsory entity in said representation.

11.   A method according to claim 10 wherein said second set of nodes comprises zero or more child nodes of at least one parent node in said representation lying along a directed path from said root node to said least one compulsory entity.

10

12.   A method according to claim 10 wherein said corresponding distances comprise a number of links separating the subject nodes in said representation.

13.   A method according to claim 11 wherein, for step (iii), said zero or more child

15   nodes are selected as context nodes from all child nodes of said least one parent node, said selection comprising the steps of:

(iii-a) computing a first occurrence probability of said parent node appearing with none of its child nodes other than a fifth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one

20   compulsory entity, said fifth set comprising child nodes of said parent node lying along a directed path from said parent node to said least one compulsory entity;

(iii-b) computing a second occurrence probability of each child node in a sixth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one compulsory entity, said sixth set comprising

child nodes of said parent node that do not lie along a directed path from said parent node to said least one compulsory entity;

(iii-c) computing a total sum of said first occurrence probability and said second occurrence probabilities;

5   (iii-d) creating a fictitious node and assigning said fictitious node said first occurrence probability;

(iii-e) selecting said fifth set of child nodes as context nodes;

(iii-f) selecting as context nodes a seventh set of child nodes formed from said sixth set of child nodes and said fictitious node arranged in order of descending values of

10   said first occurrence probability or said second occurrence probability, and for which the sum of said first occurrence probability or said second occurrence probabilities of said seventh set of child nodes equals or exceeds half of said total sum; and

(iii-g) deselecting as a context node said fictitious node if said fictitious node is selected in said seventh set of child nodes,

15   wherein said first occurrence probability and said second occurrence probability are approximated using at least one occurrence frequency of a node in said representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence frequency between an n-tuple of nodes in said representation observed in said least one previous view.

20

14..   A method according to claim 13 wherein said fictitious node prevents other nodes, whose associated probabilities are less than the probability associated with the fictitious node, from being selected, since nodes are selected as context nodes until their sum exceeds halt of the total sum-.

15.   A method according to claim 11 wherein, for step (iii), said zero or more child nodes are selected as context nodes from all child nodes of said least one parent node, said selection comprising the steps of;

5   (iii-a)   computing a first occurrence probability of said parent node appearing with none of its child nodes other than a fifth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one compulsory entity, said fifth set comprising child nodes of said parent node lying along a directed path from said parent node to said least one compulsory entity;

10   (iii-b)   selecting said fifth set of child nodes as context nodes; and

if said first occurrence probability is less than or equal to 0.5:

        (iii-c)   computing, a second occurrence probability of each child node in a sixth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one compulsory entity, said sixth set

15   comprising child nodes of said parent node that do not lie along a directed path from said parent node to said least one compulsory entity;

        (iii-d)   computing a total sum of said second occurrence probabilities of said second set of child nodes;

        (iii-e)   selecting as context nodes a seventh set of child nodes formed from

20   said sixth set of child nodes in order of descending values of said second occurrence probability until the sum of said second occurrence probabilities of said seventh set of child nodes equals or exceeds half of said total sum,

        wherein said first occurrence probability and said second occurrence probability are approximated using at least one occurrence frequency of a node in said

representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence frequency between an n-tuple of nodes in said representation observed in said least one previous view.

5   16.   A method according to claim 10 wherein said second set of nodes comprises zero or more child nodes of at least one parent node in said representation not lying along a directed path from said root node to said least one compulsory entity.

17.   A method according to claim 16 wherein, for step (iii), said zero or more child

10   nodes are selected from all child nodes of said least one parent node, said selection comprising the steps of:

(iii-a)   computing a first occurrence probability of said parent node appearing without any of its child nodes given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one

15   compulsory entity;

(iii-b)   computing a second occurrence probability of each child node of said parent node given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said least one compulsory entity;

(iii-c)   computing a total sum of said first occurrence probability and said

20   second occurrence probabilities of all child nodes of said parent node;

(iii-d)   creating a fictitious node and assigning said fictitious node said first occurrence probability;

(iii-e)   selecting as context nodes those nodes from a set of said fictitious node and all child nodes of said parent node arranged in order of descending values of said

first occurrence probability or said second occurrence probabilities until the sum of said

first occurrence probability or said second occurrence probability of selected nodes equals

or exceeds half of said total sum; and

(iii-f)   deselecting said fictitious node as a context node if said fictitious

5   node is among said selected nodes,

wherein said first occurrence probability and said second occurrence

probability are approximated using at least one occurrence frequency of a node in said

representation, co-occurrence frequency between a pair of nodes in said representation,

and joint-occurrence frequency between an n-tuple of nodes in said representation

10   observed in said least one previous view.

18.   A method according to claim 16 wherein, for step (iii), said zero or more child

nodes are selected from all child nodes of said least one parent node, said selection

comprising the steps of

15   (iii-a) computing a first occurrence probability of said parent node appearing

without any of its child nodes given the occurrence of said parent node, ancestors of said

parent node up to and including said root node and said least one compulsory entity; and

if said first occurrence probability is less than or equal to 0.5:

(iii-b) computing a second occurrence probability of each child node of said

20   parent node given the occurrence of said parent node, ancestors of said parent node up to

and including said root node and said least one compulsory entity;

(iii-c) computing a total sum of said second occurrence probabilities of all child

nodes of said parent node, and

(iii-d) selecting as context nodes, those nodes from the set of all child nodes of

said parent node in order of descending values of said second occurrence probability until the sum of said second occurrence probability of selected nodes equals or exceeds half of said total sum,

wherein said first occurrence probability and said second occurrence probability are approximated using at least one occurrence frequency of a node in said representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence frequency between an n-tuple of nodes in said representation observed in said least one previous view.

19.   A method according to claim 1 wherein said compulsory entity represents one of:

         (i)   a location of one or more search keywords; and

         (ii)   a user-selected entity.

20.   A method according to claim 3 wherein said graphical representation comprises a tree representation and step (i) or (ii) includes detecting a user's selection of a sub-tree of said representation, wherein, for step (iii), zero or more child nodes of at least one parent node in said user-selected sub-tree are selected in a set of context nodes, said selection comprising the steps of

         (iii-a)   computing a first occurrence probability of said parent node appearing without any of its child nodes given the occurrence of said parent node, ancestors of said parent node up to and including the root node of said user-selected sub-tree;

         (iii-b)   computing a second occurrence probability of each child node of said parent node given the occurrence of said parent node, ancestors of said parent node up

to and including the root node of said user-selected sub-tree;

(iii-c)   computing a total sum of said first occurrence probability and said second occurrence probabilities of all child nodes of said parent node;

(iii-d)   creating a fictitious node and assigning said fictitious node said first occurrence probability;

(iii-e)   selecting as context nodes those nodes from the set of said fictitious node and all child nodes of said parent node in order of descending values of said first occurrence probability or said second occurrence probability until the sum of said first occurrence probability or said second occurrence probability of selected nodes equals or exceeds half of said total sum; and

(iii-f)   deselecting said fictitious node if said fictitious node is among said selected nodes

21.   A method according to claim 3 wherein said graphical representation comprises a tree representation and step (i) or (ii) includes detecting a user's selection of a sub-tree of said representation, wherein, for step (iii), zero or more child nodes of at least one parent node in said user-selected sub-tree are selected in a set of context nodes, said selection comprising the steps of:

(iii-a)   computing a first occurrence probability of said parent node appearing without any of its child nodes given the occurrence of said parent node, and ancestors of said parent node up to and including the root node of said user-selected sub-tree;

if said first occurrence probability is less than or equal to 0.5

(iii-b)   computing a second occurrence probability of each child node of

said parent node given the occurrence of said parent node, and ancestors of said parent node up to and including the root node of said user-selected sub-tree;

(iii-c)   computing a total sum of said second occurrence probability of all child nodes of said parent node; and

5   (iii-d)   selecting as context nodes those nodes from the set of all child nodes of said parent node in order of descending values of said second occurrence probability until the sum of said second occurrence probability of selected nodes equals or exceeds half of said total sum.

10   22.   A method of construction and presentation of data for a keyword searching operation in at least one data source involving at least one search keyword, said method comprising the steps of:

(i)   constructing a graphical representation of said least one data source and at least one previous view of said least one data source;

15   (ii)   identifying at least one compulsory entity in said graphical representation, where said compulsory entity is a node in said graphical representation representing a location of one or more said least one search keyword;

(iii)   referring to at least one data structure comprising said least one compulsory entity and one or more context entities corresponding to at least one search keyword, 20   where said context entities are obtained from said graphical representation and context data obtained from said least one previous view; and

(iv)   presenting said least one data as result of said keyword searching operation.

23.   A method according to claim 22 wherein said one data source is hierarchical.

24.   A computer readable medium, having a program recorded thereon, where the
program is configured to make a computer execute a procedure to present data from at
least one data source, said program comprising:

5   (i)   code for holding a representation of said least one data source and at least
one previous view of said least one data source;

           (ii)   code for identifying at least one compulsory entity in said representation;
and

           (iii)   code for presenting data comprising said least one compulsory entity and
10   one or more context entities, where said context entities are obtained from said
representation and context data obtained from said least one previous view.

25.   A computer readable medium according to claim 24 wherein at least one said data
source is hierarchical and one said data structure is hierarchical.

15

26.   A computer readable medium, having a program recorded thereon, where the
program is configured to make a computer execute a procedure to construct and present
data for a keyword searching operation in at least one data source involving at least one
search keyword, said program comprising:

20   (i)   code for constructing a graphical representation of said least one data
source and at least one previous view of said least one data source;

           (ii)   code for identifying at least one compulsory entity in said graphical
representation, where said compulsory entity is a node in said graphical representation
representing a location of one or more said least one search keyword;

(iii)   code for constructing at least one data structure comprising said least one compulsory entity and one or more context entities, where said context entities are obtained from said graphical representation and context data obtained from said least one previous view; and

5   (iv)   code for presenting said least one data structure as result of said keyword searching operation.

27.   A computer readable medium according to claim 26 wherein at least one said data source is hierarchical and at least one said data structure is hierarchical.

10

28.   Computer apparatus for constructing at least one data structure from at least one data source, said apparatus comprising

        a first constructing module configured to construct a representation of said least one data source and at least one previous view of said least one data source;

15   an identifying module configured to identify at least one compulsory entity in said representation; and

        a second constructing module configured to construct said at least one data structure comprising said least one compulsory entity and one or more context entities, where said context entities are obtained from said representation and context data obtained

20   from said least one previous view.

29.   Computer apparatus according to claim 28 wherein said one data source is hierarchical and said one data structure is hierarchical.

30.   Computer apparatus for construction and presentation of data for a keyword searching operation in at least one data source involving at least one search keyword, said apparatus comprising:

a constructing module adapted to construct a graphical representation of said least

5   one data source and at least one previous view of said least one data source;

an identifying module adapted to identify at least one compulsory entity in said graphical representation, where said compulsory entity is a node in said graphical representation representing a location of one or more said least one search keyword;

a constructing module adapted to constructing at least one data structure

10   comprising said least one compulsory entity and one or more context entities, where said context entities are obtained from said graphical representation and context data obtained from said least one previous view; and

a presenting module adapted to present said least one data structure as result of said keyword searching operation.

15

31.   A method of constructing at least one data structure substantially as described herein with reference to any one of the embodiments as that embodiment is illustrated in the drawings.

20   32.   A computer readable medium having a computer program recorded thereon and adapted to make a computer execute the method according to claim 31.

33.   Computer apparatus for constructing at least one data structure according to the method of claim 31.

34.   The invention of any one of claims 31 to 33 wherein said one data structure is hierarchical.

AMENDED CLAIMS
[received by the International Bureau on 24 March 2005 (24.03.05);
original claims 1-34 replaced by new claims 1-34 (13 pages)]

1.   A method of presenting data from at least one data source, said method comprising the steps of:

(i)   providing a representation of said at least one data source and at least one previous view of said at least one data source;

(ii)   identifying at least one compulsory entity in said representation; and

(iii)   presenting a data structure comprising said at least one compulsory entity and one or more context entities, where said context entities are obtained from said representation using context data obtained from said at least one previous view.

2.   A method according to claim 1 wherein at least one said data source is hierarchical and said data structure is hierarchical.

3.   A method according to claim 1 wherein said representation comprises a graphical representation.

4.   A method according to claim 3 wherein said graphical representation comprises a schema representation of said at least one data source and said at least one previous view.

5.   A method according to claim 1 wherein said context data comprises data evaluated to represent a measure of relevance of said context entities to said compulsory entity.

6.   A method according to claim 5 wherein said context data comprises at least one

associated numerical data.

7.   A method according to claim 6 wherein said at least one associated numerical data comprises occurrence and joint-occurrence frequencies of entities in said representation observed

5   in said at least one previous view.

8.   A method according to claim 2 wherein a root node of said at least one hierarchical data structure is an ancestor node of said at least one compulsory entity in said representation.

10 9.   A method according to claim 2 wherein said at least one hierarchical data structure is assigned a score equal to the occurrence probability of a root node given the occurrence of each of said at least one compulsory entity.

10.   A method according to claim 8 wherein said one or more context entities is selected

15 from the group consisting of:

    (a)   said root node;

    (b)   a first set of nodes along at least one directed path in said representation from said root node to said at least one compulsory entity;

    (c)   a second set of nodes selected from descendant nodes of said root node in said

20 representation, each said node in said second set being selected based upon a corresponding occurrence probability, each said occurrence probability being derived from the occurrence of ancestors of said node up to and including said root node and said at least one compulsory entity;

    (d)   a third set of nodes selected from descendant nodes of said root node in said representation based on a corresponding distance of said third set node from said root node in

said representation; and

(e)   a fourth set of nodes selected from descendant nodes of said root node in said representation based on a corresponding distance of said fourth set node from said at least one compulsory entity in said representation.

5

11.   A method according to claim 10 wherein said second set of nodes comprises zero or more child nodes of at least one parent node in said representation lying along said directed path from said root node to said at least one compulsory entity.

10   12.   A method according to claim 10 wherein said corresponding distances comprise a number of links separating the subject nodes in said representation.

13.   A method according to claim 11 wherein, for step (iii), said zero or more child nodes are selected as context nodes from all child nodes of said at least one parent node, said selection

15   comprising the steps of:

(iii-a)   computing a first occurrence probability of said parent node appearing with none of its child nodes other than a fifth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity, said fifth set comprising child nodes of said parent node lying along a directed path from

20   said parent node to said at least one compulsory entity;

(iii-b)   computing a second occurrence probability of each child node in a sixth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity, said sixth set comprising child nodes of said parent node that do not lie along a directed path from said parent node to said at least one

compulsory entity;

(iii-c) computing a total sum of said first occurrence probability and said second occurrence probabilities;

(iii-d) creating a fictitious node and assigning said fictitious node said first occurrence

5   probability;

(iii-e) selecting said fifth set of child nodes as context nodes;

(iii-f) selecting as context nodes a seventh set of child nodes formed from said sixth set of child nodes and said fictitious node arranged in order of descending values of said first occurrence probability or said second occurrence probability, and for which the sum of said first

10   occurrence probability or said second occurrence probabilities of said seventh set of child nodes equals or exceeds half of said total sum; and

(iii-g) deselecting as a context node said fictitious node if said fictitious node is selected in said seventh set of child nodes,

wherein said first occurrence probability and said second occurrence probability are

15   approximated using at least one occurrence frequency of a node in said representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence frequency between an n-tuple of nodes in said representation observed in said at least one previous view.

20   14.   A method according to claim 13 wherein said fictitious node prevents other nodes, whose associated probabilities are less than the probability associated with the fictitious node, from being selected, since nodes are selected as context nodes until their sum exceeds half of the total sum-.

AMENDED SHEET (ARTICLE 19)

15.   A method according to claim 11 wherein, for step (iii), said zero or more child nodes are selected as context nodes from all child nodes of said at least one parent node, said selection comprising the steps of;

(iii-a)   computing a first occurrence probability of said parent node appearing

5   with none of its child nodes other than a fifth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity, said fifth set comprising child nodes of said parent node lying along a directed path from said parent node to said at least one compulsory entity;

(iii-b)   selecting said fifth set of child nodes as context nodes; and

10   if said first occurrence probability is less than or equal to 0.5:

(iii-c)   computing, a second occurrence probability of each child node in a sixth set of nodes, given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity, said sixth set comprising child nodes of said parent node that do not lie along a directed path from said parent node to said at

15   least one compulsory entity;

(iii-d)   computing a total sum of said second occurrence probabilities of said second set of child nodes;

(iii-e) .   selecting as context nodes a seventh set of child nodes formed from said sixth set of child nodes in order of descending values of said second occurrence probability until

20   the sum of said second occurrence probabilities of said seventh set of child nodes equals or exceeds half of said total sum,

wherein said first occurrence probability and said second occurrence probability are approximated using at least one occurrence frequency of a node in said representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence

frequency between an n-tuple of nodes in said representation observed in said at least one previous view.

16.   A method according to claim 10 wherein said second set of nodes comprises zero or more child nodes of at least one parent node in said representation not lying along said directed path from said root node to said at least one compulsory entity.

17.   A method according to claim 16 wherein, for step (iii), said zero or more child nodes are selected from all child nodes of said at least one parent node, said selection comprising the steps of:

(iii-a)   computing a first occurrence probability of said parent node appearing without any of its child nodes given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity;

(iii-b)   computing a second occurrence probability of each child node of said parent node given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity;

(iii-c)   computing a total sum of said first occurrence probability and said second occurrence probabilities of all child nodes of said parent node;

(iii-d)   creating a fictitious node and assigning said fictitious node said first occurrence probability;

(iii-e)   selecting as context nodes those nodes from a set of said fictitious node and all child nodes of said parent node arranged in order of descending values of said first occurrence probability or said second occurrence probabilities until the sum of said first occurrence probability or said second occurrence probability of selected nodes equals or exceeds

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half of said total sum; and

        (iii-f)   deselecting said fictitious node as a context node if said fictitious node is among said selected nodes,

        wherein said first occurrence probability and said second occurrence probability are

5   approximated using at least one occurrence frequency of a node in said representation, co-occurrence frequency between a pair of nodes in said representation, and joint-occurrence frequency between an n-tuple of nodes in said representation observed in said at least one previous view.

10   18.   A method according to claim 16 wherein, for step (iii), said zero or more child nodes are selected from all child nodes of said at least one parent node, said selection comprising the steps of

        (iii-a) computing a first occurrence probability of said parent node appearing without any of its child nodes given the occurrence of said parent node, ancestors of said parent node up to

15   and including said root node and said at least one compulsory entity; and

if said first occurrence probability is less than or equal to 0.5:

        (iii-b) computing a second occurrence probability of each child node of said parent node given the occurrence of said parent node, ancestors of said parent node up to and including said root node and said at least one compulsory entity;

20   (iii-c) computing a total sum of said second occurrence probabilities of all child nodes of said parent node, and

        (iii-d) selecting as context nodes, those nodes from the set of all child nodes of said parent node in order of descending values of said second occurrence probability until the sum of said second occurrence probability of selected nodes equals or exceeds half of said total sum,

wherein said first occurrence probability and said second occurrence probability are

approximated using at least one occurrence frequency of a node in said representation, co-

occurrence frequency between a pair of nodes in said representation, and joint-occurrence

frequency between an n-tuple of nodes in said representation observed in said at least one

5   previous view.

19.   A method according to claim 1 wherein said compulsory entity represents one of:

        (i)   a location of one or more search keywords; and

        (ii)   a user-selected entity.

10

20.   A method according to claim 3 wherein said graphical representation comprises a tree

representation and step (i) or (ii) includes detecting a user's selection of a sub-tree of said

representation, wherein, for step (iii), zero or more child nodes of at least one parent node in said

user-selected sub-tree are selected in a set of context nodes, said selection comprising the steps of

15   (iii-a)   computing a first occurrence probability of said parent node appearing

without any of its child nodes given the occurrence of said parent node, ancestors of said parent

node up to and including the root node of said user-selected sub-tree;

               (iii-b)   computing a second occurrence probability of each child node of said

parent node given the occurrence of said parent node, ancestors of said parent node up to and

20   including the root node of said user-selected sub-tree;

               (iii-c)   computing a total sum of said first occurrence probability and said second

occurrence probabilities of all child nodes of said parent node;

               (iii-d)   creating a fictitious node and assigning said fictitious node said first

occurrence probability;

(iii-e)   selecting as context nodes those nodes from the set of said fictitious node

and all child nodes of said parent node in order of descending values of said first occurrence

probability or said second occurrence probability until the sum of said first occurrence probability

or said second occurrence probability of selected nodes equals or exceeds half of said total sum;

5   and

(iii-f)   deselecting said fictitious node if said fictitious node is among said

selected nodes

21.   A method according to claim 3 wherein said graphical representation comprises a tree

10   representation and step (i) or (ii) includes detecting a user's selection of a sub-tree of said

representation, wherein, for step (iii), zero or more child nodes of at least one parent node in said

user-selected sub-tree are selected in a set of context nodes, said selection comprising the steps

of:

(iii-a)   computing a first occurrence probability of said parent node appearing

15   without any of its child nodes given the occurrence of said parent node, and ancestors of said

parent node up to and including the root node of said user-selected sub-tree;

if said first occurrence probability is less than or equal to 0.5

(iii-b)   computing a second occurrence probability of each child node of said

parent node given the occurrence of said parent node, and ancestors of said parent node up to and

20   including the root node of said user-selected sub-tree;

(iii-c)   computing a total sum of said second occurrence probability of all child

nodes of said parent node; and

(iii-d)   selecting as context nodes those nodes from the set of all child nodes of

said parent node in order of descending values of said second occurrence probability until the

sum of said second occurrence probability of selected nodes equals or exceeds half of said total

sum..

22.   A method of construction and presentation of data for a keyword searching operation in

5   at least one data source involving at least one search keyword, said method comprising the steps

of:

         (i)   constructing a graphical representation of said at least one data source and at least

one previous view of said at least one data source;

         (ii)   identifying at least one compulsory entity in said graphical representation, where

10   said compulsory entity is a node in said graphical representation representing a location of one or

more said at least one search keyword;

         (iii)   constructing at least one data structure comprising said at least one compulsory

entity and one or more context entities corresponding to at least one search keyword, where said

context entities are obtained from said graphical representation using context data obtained from

15   said at least one previous view; and

         (iv)   presenting said at least one data as result of said keyword searching operation.

23.   A method according to claim 22 wherein at least one said data source is hierarchical.

20   24.   A computer readable medium, having a program recorded thereon, where the program is

configured to make a computer execute a procedure to present data from at least one data source,

said program comprising:

         (i)   code for providing a representation of said at least one data source and at least one

previous view of said at least one data source;

(ii)   code for identifying at least one compulsory entity in said representation; and

(iii)   code for presenting a data structure comprising said at least one compulsory entity and one or more context entities, where said context entities are obtained from said representation using context data obtained from said at least one previous view.

5

25.   A computer readable medium according to claim 24 wherein at least one said data source is hierarchical and said data structure is hierarchical.

26.   A computer readable medium, having a program recorded thereon, where the program is

10   configured to make a computer execute a procedure to construct and present data for a keyword searching operation in at least one data source involving at least one search keyword, said program comprising:

(i)   code for constructing a graphical representation of said at least one data source and at least one previous view of said at least one data source;

15   (ii)   code for identifying at least one compulsory entity in said graphical representation, where said compulsory entity is a node in said graphical representation representing a location of one or more said at least one search keyword;

(iii)   code for constructing at least one data structure comprising said at least one compulsory entity and one or more context entities, where said context entities are obtained from

20   said graphical representation using context data obtained from said at least one previous view; and

(iv)   code for presenting said at least one data structure as result of said keyword searching operation.

27.   A computer readable medium according to claim 26 wherein at least one said data source is hierarchical and at least one said data structure is hierarchical.

28.   Computer apparatus for constructing at least one data structure from at least one data source, said apparatus comprising

a first constructing module configured to construct a representation of said at least one data source and at least one previous view of said at least one data source;

an identifying module configured to identify at least one compulsory entity in said representation; and

a second constructing module configured to construct said at least one data structure comprising said at least one compulsory entity and one or more context entities, where said context entities are obtained from said representation using context data obtained from said at least one previous view.

29.   Computer apparatus according to claim 28 wherein at least one said data source is hierarchical and said at least one data structure is hierarchical.

30.   Computer apparatus for construction and presentation of data for a keyword searching operation in at least one data source involving at least one search keyword, said apparatus comprising:

a constructing module adapted to construct a graphical representation of said at least one data source and at least one previous view of said at least one data source;

an identifying module adapted to identify at least one compulsory entity in said graphical representation, where said compulsory entity is a node in said graphical representation

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representing a location of one or more said at least one search keyword;

a constructing module adapted to constructing at least one data structure comprising said at least one compulsory entity and one or more context entities, where said context entities are obtained from said graphical representation using context data obtained from said at least one

5   previous view; and

a presenting module adapted to present said at least one data structure as result of said keyword searching operation.

31.   A method of constructing at least one data structure substantially as described herein

10   with reference to any one of the embodiments as that embodiment is illustrated in the drawings.

32.   A computer readable medium having a computer program recorded thereon and adapted to make a computer execute the method according to claim 31.

15   33.   Computer apparatus for constructing at least one data structure according to the method of claim 31.

34.   The invention of any one of claims 31 to 33 wherein said one data structure is hierarchical.

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